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THE QUANTITY THEORY AND ITS CRITICS.

I.

THE quantity theory of the value of money—that the value of money, as shown by the general level of prices, varies inversely as its quantity—is just now the most mooted point in the discussion of monetary principles. During the bimetallic controversy of the last quarter of the nineteenth century the bimetallicists constantly employed the quantity theory to support their views. The gold monometallists, on the other hand, seeing the quantity principle used against them so much, naturally sought to minimize its importance. Some of them even devised arguments which appeared to overthrow it altogether or render it inapplicable to existing conditions. Thus was generated a new school of monetary writers. For convenience, and because they lay emphasis on the function of credit as a medium of exchange, they are referred to in this article as the “credit school.”

These new writers have produced some valuable results. They have improved our terminology by enlarging it and clearing away ambiguities. They have shown that the quantity principle, even in its best form as stated by Mill or Walker, fails to take into account some modifying factors of great importance. They have raised the study of monetary history to something like its proper place. Above all else, they have compelled us to see the vast importance of credit in the modern mechanism of exchange. In accomplishing these results they have incidentally found errors in the work of nearly everyone who has written on the subject of money.

Since they have done such a good work in clearing away rubbish, it is doubtless to be expected that they will carry the destruction too far. It is the proper function of those who profess attachment to the old views, or who have been merely spectators up to this time, to say what of the old is of value and should be rescued from the rubbish heap. Such a duty the present writer sets before him.

Let us first see how far the new writers propose to go.

Lord Farrer has not written a systematic treatise on money, and his position is not very clear; but the following, written in 1888, places him definitely in the credit school:

Considering how rarely and exceptionally gold is actually used, and considering at the same time how regular and universal is the operation of what I have called the substantial solvency of the debtor, it seems to me that the effect of the supply of gold, and especially of the supply of gold in different places and countries, in limiting credit money is altogether a subordinate one.¹

Professor William A. Scott wrote in 1897: "The quantity theory is not true and should no longer be made the basis of reasoning on monetary questions."² Then in a systematic treatise published this year he devoted a chapter to the subject to show "that it will not bear analysis and the test of logic and facts."³

Professor Laughlin's attitude toward the quantity theory is shown in these words:

The age of a dogma should be no protection from critical inquiry. If the basic assumptions of the quantity theory are shown to be unsound, if the reasoning is found to be defective, and if it can be plainly proved that the doctrine does not satisfactorily explain the admitted facts—if all these points can be established, then it is evident that it must be given up. Finally, in addition to all this, if another theory of price regulation can be given which will explain the available statistical data, there will be a confirmation of the destructive criticism.⁴

With the two most eminent writers on money in the United States, and one of the most eminent abroad, thus arrayed in opposition, it is evident that the quantity theory stands condemned by contemporary authority.

"The chief fallacy of the quantity theorists," according to Professor Scott, "consists in the fact that they entirely overlook the necessity for a commodity standard."⁵ The issue involved in this statement may be formulated thus: Is it a logical possibility for tokens, of little or no value for any other purpose, to serve as a standard of value? Paper money comes readiest to

¹ *Studies in Currency*, 1898, p. 166.

² *Annals of the American Academy of Political and Social Science*, Vol. —, pp. — March, 1897.

³ *Money and Banking*, p. 55. ⁴ *The Principles of Money*, p. 313. ⁵ *Op. cit.*, p. 57.

mind as an illustration of this kind of money; then we think of overvalued coins, while Professor Nicholson uses dodo bones in an extended illustration. Such a standard has long been supposed to be not only logically possible, but also a matter of experience. But the new critics discard the old view entirely. "It is impossible," says Professor Scott, "to denominate or name what does not exist."¹ The historical examples of inconvertible paper, like the *assignats* and the greenbacks, are explained by saying that the value of the paper was derived entirely from the possibility of its redemption, at some future time, in the original standard commodity.

While there may be some difficulty in naming "what does not exist," it cannot be conceded that a purely artificial or paper standard of value has no real existence. It does exist, in a very real sense, in the minds and habits of the people. Very few of the eighty millions of people of the United States are aware that a dollar as a standard of value means 23.22 grains of gold. For the great multitude the value of a dollar has only a psychological basis, but it is none the less real. A workman is considering whether he will spend a dollar for a Thanksgiving turkey or not. He may compare the turkey with the work it takes to earn a dollar, or with something else which a dollar will buy. More likely, however, he does not compare the turkey with any particular commodity, but simply with a dollar. A dollar is a distinct entity in his thought, the marginal value of which he tests every time he makes a purchase or decides not to make one, every time he concludes to take up his work of earning dollars again or not to take it up.

But this conception of a dollar need not be restricted to "the great multitude." Does anybody—even the professor of money and banking—think of the turkey he contemplates buying in terms of grains of gold? Does he habitually think of his prospective purchases in terms of any one commodity, or even of now one commodity and now another? When these rapid decisions for or against the numberless purchases are made, a dollar is simply a dollar, with a value of its own in our estima-

¹ *Ibid.*, p. 60.

tion, whether that value be based ultimately on gold or some other commodity, or on nothing whatever except the general purchasing power we have associated with it from long experience. Value is not a physical phenomenon, but psychological and social. Therefore a commodity standard is not logically necessary in a monetary system. All that is necessary is some process that will accustom the community to some denomination as a unit. In the beginning this process cannot, it is true, be anything else than the use of some commodity as a standard. But when the habit has once been started, this unit and the name which denominates it may continue in use indefinitely after all connection with the commodity that gave them birth has been severed. Many denominations of money could be named that continued in use as money of account long after the coins which they originally designated went out of circulation. Even to this day the term "shilling" is used by some people in the United States.¹

But after token money has in some way become the standard, what determines its value? When I first saw the assertion that inconvertible paper depends for its value entirely on the probability that it will be redeemed, there came to my mind immediately the opposite assertion, heard first in a lecture in college, that the value of inconvertible paper depends on its quantity and is in no way affected by the credit of the authority issuing it as long as the people have enough confidence in it to use it as money. Each of these views contains half of the truth. If the value of depreciated money were determined solely by its marginal utility as a medium of exchange, its value would vary inversely as its quantity. But suppose such paper had circulated at one-half the value of specie, and it became known today for a certainty that it would be redeemed in six months at full value. A large part of it would be set aside by the present holders to await redemption; as a speculative investment it would at once be worth par less discount at the current rate of interest for six months. The part remaining in circulation would be diminished in quantity enough to raise its value as a medium of exchange

¹ See LAUGHLIN, *op. cit.*, p. 31, including note.

to a level with the value of that held as an investment; the fall of prices would be attended by much friction and would begin with an acute monetary stringency that would occasion a panic. In this way the credit theory and the quantity theory are harmonized.

To turn the criticism upon the critics—their “chief fallacy” seems to me to consist in their failure to see that an article can have utility simply as money. If people are willing to use it as a circulating medium, there is a demand for it that gives it value; it is not necessary that the article have value for something else in order to have value here. If Congress, instead of passing the Resumption Act in 1875, had directed the secretary of the treasury either to retire or reissue greenbacks according as prices, as shown by index numbers, should either rise above or fall below the point where they then were, the measure might not have been a wise one; but only a concerted action by the business men of the country could have dislodged the greenbacks from the place they had occupied for thirteen years as the standard of value; such concerted action is less conceivable than the continued use of the greenbacks after hope of their redemption had been taken away.

II.

The main question at issue between the credit school and the quantity school—one might almost say the only question, for all the others seem to depend upon it—is on the subject of demand and supply. Is the strength of the demand for the standard proportioned to the amount of business to be done? Is there a monetary demand for gold that amounts to anything in determining its value? The adherents of the credit school say not. I will first try to state their view: Gold coin is the standard of value. It is not, to any considerable extent, the medium of exchange. The medium of exchange is composed of silver and other metals, paper money and other credit devices. The medium of exchange, it is true, needs to be proportioned roughly to the amount of business done; but the things of which it is composed may be adjusted to the need, or adjust

themselves automatically, without in any way affecting the value of gold. The quantity of the standard coin, on the other hand, need have no definite proportion to the quantity of goods; and it is so small that it may be disregarded as a factor in determining the value of gold. The demand for gold in the arts is the only demand that need be considered in comparison with the supply. The value tends to that point where its marginal utility in the arts meets its marginal cost of production. By way of illustration, the gold needed as money has no more necessary ratio to the volume of business than the water in the indicator has to the water in the boiler. It is merely to indicate which way the balance of pressure is—to measure values. A given quantity could perform this service equally well for widely varying quantities of goods.

Here I must repeat a statement already made, namely that value is not a physical phenomenon—one to which physical measurements can be applied; it is psychological and social.¹ A physical substance can become a measure of value only by coming into actual use as a medium of exchange.² It can remain such in only one of two ways: (1) It may remain in use as a medium. Credit and token money may be extensively used as media, but they must be kept convertible into the standard medium. There is a strong tendency to overissue these cheap substitutes and thus depreciate the unit of value. When this has been done, the material used as a standard seeks employment in the arts rather than as money, and the production tends to fall off; this continues until a panic annihilates some of the credit and brings prices back to, or below, their proper level. To maintain convertibility in panic times, there must be reserves of the standard money, and these reserves must be occasionally used. If the reserves are used, even occasionally, there will be some of the standard money in actual circulation. But it should not be forgotten that the standard money in the reserves is also,

¹ See WHITE, *Money and Banking*, second edition, pp. 158, 159.

² "The money which is the standard of value is always one of the 'means of exchange.'"—FARRER, *op. cit.* p. 177. He also says on p. 103: "It is at the same time true that the gold sovereign can only become a measure of value by being a medium of exchange." For the opposite view see LAUGHLIN *op. cit.*, pp. 6 ff.

by proxy, performing the function of a medium. (2) Convertibility, which is merely an automatic device for regulating the quantity of media and circulation, may be dispensed with, and along with it may go the standard money itself. Not even a single dollar need be kept to measure by. The value of the substance used as a standard may be taken from its price in the market where it is bought and sold for use in the arts. The token money provided by the government or by a central bank may be regulated in quantity with a view to keeping the general level of prices where the price of the standard material will remain at a given point. If price goes below this point, issue more money; if it goes above, destroy or hoard some of the money received in the regular course of business instead of reissuing it.¹

The second of these alternatives has never been seriously proposed, for the reason that no government has ever existed that was either wise enough or honest enough to be trusted to administer it. It is merely a logical possibility. We are therefore shut up to the first alternative. The people who suggest, as a third possibility, a régime of pure credit, with no valuable material in circulation to serve as a standard, are either thinking of the second alternative or else their ideas must be regarded as visionary. There must, accordingly, be a stock of the standard material in use as a medium of exchange, and a much larger stock in the reserves to insure the convertibility of token money and credit.

We may first notice the use of gold in passing from hand to hand between individuals. The amount of gold used in this way is not great, but still there is some. In any part of the United States one will occasionally receive gold coin in payments of five dollars and above. In California gold is largely used in these transactions between individuals. An investigation made by Professor David Kinley showed that two-fifths of the deposits made in California banks by retail dealers were in gold coin.² This

¹This possible arrangement was suggested by MILL, *Principles of Political Economy*, Book III, chap. xiii, § 2.

²JOURNAL OF POLITICAL ECONOMY, Vol. III, p. 205, March, 1895.

habit doubtless started fifty-five years ago in the use of freshly mined gold in the form of dust and nuggets; it was confirmed during the Civil War when the people of that region had a struggle to exclude the greenbacks from circulation. It must be granted that the people of California, and the others who prefer to use gold, might use token money or some form of credit. But the fact is they do not. If more payments are to be made, one of three results must follow: (*a*) more gold must be drawn into circulation; (*b*) the business habits of the community must be changed; (*c*) prices must be lowered. If an additional amount of gold be used as money, this same gold cannot be used in the arts; its utility in the arts is thereby made greater than it otherwise would be. As to business habits, it is well known that they do not change readily; to show how there is room for them to change is a very different thing from showing that they do change. The fact that the people of California still carry gold in their pockets as a result of an experience forty or fifty years ago shows the persistence of habits relating to the kind of money used.

Of course, habits do change sometimes; but when a new habit has once been developed, it may insist on remaining after its original cause has been removed. For instance, from 1875 to 1890 there came a vast increase in the amount of goods produced, but there was not a corresponding increase in the production of gold. The writers of the credit school have shown that an excessive fall of prices was obviated by a growth of the habit of keeping money in banks and making payment in checks. But now that a large production of gold has come, it is not likely that the banking habit will diminish;¹ if a rise of prices is avoided, it will be for some other reason. Here theoretical discussion must give way to historical research. Just in what degree are these habits subject to change? Only a study of monetary his-

¹This statement by LORD FARRER is eminently reasonable: "The operation of the organic development of credit is steady, constant, and progressive. . . . It probably operates more strongly to check a fall than to promote a rise, since it consists in the adoption of an economical expedient which saves gold and labor, and such expedients are more generally adopted in times of depression and of falling prices than in times of speculation and of rising prices." — *Op. cit.*, p. 106.

tory can answer. The question, however, for the historically inclined economist to investigate is rather on the comparative resistance of two different habits: the habit of making exchanges at a given level of prices, and the habit of using certain media of payment. The one can be maintained only by forcing the other to yield. If gold (the monetary part of it) increases in quantity in a greater ratio than the quantity of goods, the business world must take its choice of two alternatives—employ gold in place of some other media of payment, or raise the general level of prices. It is reasonable to expect a little of both; it is unreasonable to assume that, because the habits as to kinds of media can change, the prices need never change. Such an increase in gold took place from 1850 to 1860; while from 1875 to 1890 goods increased in a greater ratio than gold. Those who contend that there is no connection between the quantity of gold (the part used for monetary purposes) and the amount of business really assume that the adjustability of habit in regard to the media of exchange is immediate in its action and unlimited in its extent, and all for the purpose of leaving habitual prices unchanged.

Then there is the gold held in the reserves of banks and governments. The new critics refer to these as serving to maintain the standard of value. But they also serve indirectly as a medium of exchange. Of the gold held by the United States treasury, \$300,000,000 is represented in circulation by gold certificates dollar for dollar. The gold held as a reserve for the United States notes and treasury notes is less than the amount of notes in circulation; but it must, nevertheless, as we found out by experience ten years ago, bear some relation to the amount of these notes. The old rule established by the secretaries of the treasury, in interpreting an act of Congress passed in 1882, was that there should be at least \$100,000,000 of gold for the \$346,000,000 of notes. The law of 1900 requires a minimum of \$150,000,000 for both United States notes and treasury notes; the aggregate amount of these at the time the law was passed was about \$420,000,000. This gold also is performing the function of a medium of exchange, though in a way that

multiplies itself about threefold. The amount of the medium could not be much increased without either increasing the gold or changing the nature of our monetary system.

The case is much the same with the reserves of banks. All national banks and most state banks are required by law to keep on hand in actual cash a minimum percentage of their demand liabilities. With national banks in central reserve cities this minimum is 25 per cent. The reserve consists mainly of gold or gold certificates. There is therefore a tolerably close connection between the amount of gold and the volume of business transacted by means of checks, drafts, and other credit instruments that are handled by banks. The proportion between cash on hand (which, however, is not quite the same thing as the reserve, but still consists chiefly of gold) and net deposits has been as follows for all the national banks in the United States:¹

Year	Per Cent. of Cash	Year	Per Cent. of Cash	Year	Per Cent. of Cash
1882	15.6	1889.....	15.9	1896.....	19.1
1883	16.1	1890.....	16.1	1897.....	17.7
1884	20.0	1891.....	16.9	1898.....	16.9
1885	21.1	1892.....	16.3	1899.....	15.4
1886	17.3	1893.....	22.0	1900.....	15.9
1887	17.6	1894.....	19.9	1901.....	14.7
1888	17.4	1895.....	17.1	1902.....	13.2

This means that for twenty-one years the extreme limits within which credit media of exchange (so far as their volume is indicated by the figures for bank deposits) varied without a corresponding variation in the amount of cash (most of which is gold) are to each other as 22 to 13.2.

For England the proportion is given as follows by Mr. Horace White:²

Neither the great bank nor the lesser ones are required by law to keep any fixed percentage of reserve, but keep such proportion as experience shows to be needful. The Bank of England has found that its line of safety ranges between 33 and 47 per cent.

¹ From the *Statistical Abstract* for 1902, p. 76.

² *Money and Banking*, second edition. pp. 391, 392. Mr. White has sometimes been included among the critics of the quantity theory, and is therefore quoted here.

Lord Farrer makes this statement :

The amount of credit thus standing at one time in the books of the banks is from thirty to forty times as much as the bank reserve, and probably six or seven times as much as all the gold in the United Kingdom.¹

But he adds that the increase of the reserve in the Bank of England has not been in proportion to the increase of credit. Farther on he says :

A certain reserve of gold has to be kept. What the amount of this reserve is, what proportion it actually bears to existing liabilities, and what proportion it ought to bear or will bear, is more than we can predicate.²

Then again :

When credit expands prices rise, when it contracts prices fall. So far, therefore, as the supply of gold affects the reserves, and so far as the state of the reserves affects credit, a diminution in the supply of gold affects prices, and makes them fall.³

Professor Laughlin allows the connection between prices and the gold in bank reserves in even more explicit terms :

Of course, while, at any one moment, the amount of reserves actually held does limit the then existing loans and deposits, yet it is perfectly clear that, as more good loans are offered year by year, the banks will provide more gold by changing a fractional part of their increasing resources—which rise *pari passu* with the liabilities—for additional supplies of gold. . . .

. . . . There would be a definite increase in the total demand for gold, and in so far a change in its value. The supposition of a fixed supply of gold, however, is far removed from the facts as they have become known to us since 1850.⁴

The last sentence, and what follows in the same vein, was probably put in to meet the bimetallists, for it is aside from the quantity theory as a general principle. But I can see no way to harmonize the complete repudiation of the quantity theory with statements like the foregoing.

It has often been observed that changes in the quantity of gold in a country appear to affect only the reserves of banks, and this has been cited as evidence against the quantity theory. This, however, is because there is the intermediate step between changes in bank reserves and changes in prices. The first effect of an increase in bank reserves is a lowering of the rate of interest.

¹ *Op. cit.*, p. 107.

² *Ibid.*, p. 113.

³ *Ibid.*, p. 117.

⁴ *Op. cit.*, pp. 134, 135.

On the other hand depleted bank reserves mean a high rate of interest. These changes in the rates of interest pass into changes in prices, most promptly in the stock market. The low rates of interest tempt to speculation, and thus tend to increase the demand for goods and especially for securities. It is a well-known principle that the prices of securities paying fixed returns vary inversely as the market rate of interest. If the rate of interest falls from 4 per cent. to 3, a stock that yields its owner \$120 a year rises in value from \$3,000 to \$4,000. But it is also a well-established principle that changes in the quantity of money produce only temporary effects on the rate of interest. A fall in the rate of interest and the consequent rise in the price of securities will in time work off into a general rise of prices that will mean larger dividends to stocks; deposits having increased, the reserves of banks will no longer be excessive and the rate of interest will rise again, leaving the rise of prices as the only permanent result of the influx of gold.

The credit school in general, and Professor Laughlin in particular, direct our attention to bills of exchange as a medium which varies directly with the amount of goods to be sold and has no connection with the amount of gold. But there are two considerations which must not be lost sight of. In the first place, these bills go through the hands of bankers or brokers, and enter into their liabilities for which reserves must be kept. Even though the brokers keep the bills only a few hours, even though they keep no reserves to speak of themselves, depending on banks for their ready cash, the bills are liabilities while they exist, and a gold reserve must be held for them somewhere, by the bankers if not by the brokers, by the government if not by the bankers. The other consideration is that only payments in certain kinds of business are made in this way. A large proportion—how large I will not attempt to say—of all the payments made in the United States or any other country are made with bank checks or drafts, while still others are made with actual cash. These proportions are fixed in the habits of the people; they are elastic to some extent, but there are limits to the elasticity. The proportions, therefore, can be changed only by

making the organization of the commercial world something else than it is.

The small amount of gold at the bottom of this mass of credit media must not be mistaken for no gold at all, nor must it be considered a matter of small importance. The greater the superstructure, the more important the foundation. The fluctuations in the quantity of gold in the bank reserves (and in government reserves too, when the ability of the government to keep its token money at par can be questioned) are watched with extreme care by the very people who use credit media of exchange in the largest proportion. That there is a connection between the quantity of gold and prices is shown by statements like these which may be found in the financial columns of the newspapers almost any week.

The New York bank statement was even weaker than had been expected, and caused a liberal amount of liquidation in the stock market. The surplus reserve was reduced by more than one-half.

Weakness in April on the large gold exports.

Competition for the world's supply of floating gold.

The bank statement today was much more satisfactory than has been expected, and the slightly improved condition of the banks was responsible for the renewal of the buying movement which took place in the last hour of the trading.

The effect of credit substitutes for money upon the monetary system is to give it greater elasticity and delicacy. It makes it more difficult to trace the relation between the amount of business and the quantity of money, but the relation is there just as certainly as if every sale of goods were paid for in cash. Business transactions may be divided into classes, as has already been suggested, according to the media of exchange they use. Some transactions use gold, others paper money, others subsidiary coins, others some form of credit, while still others are made by pure barter. In all of these, except the last, gold is needed; in the reserves, if not directly. The proportions between these classes have their foundations deep in the nature of the transactions or in the habits of the community.¹ They cannot be easily

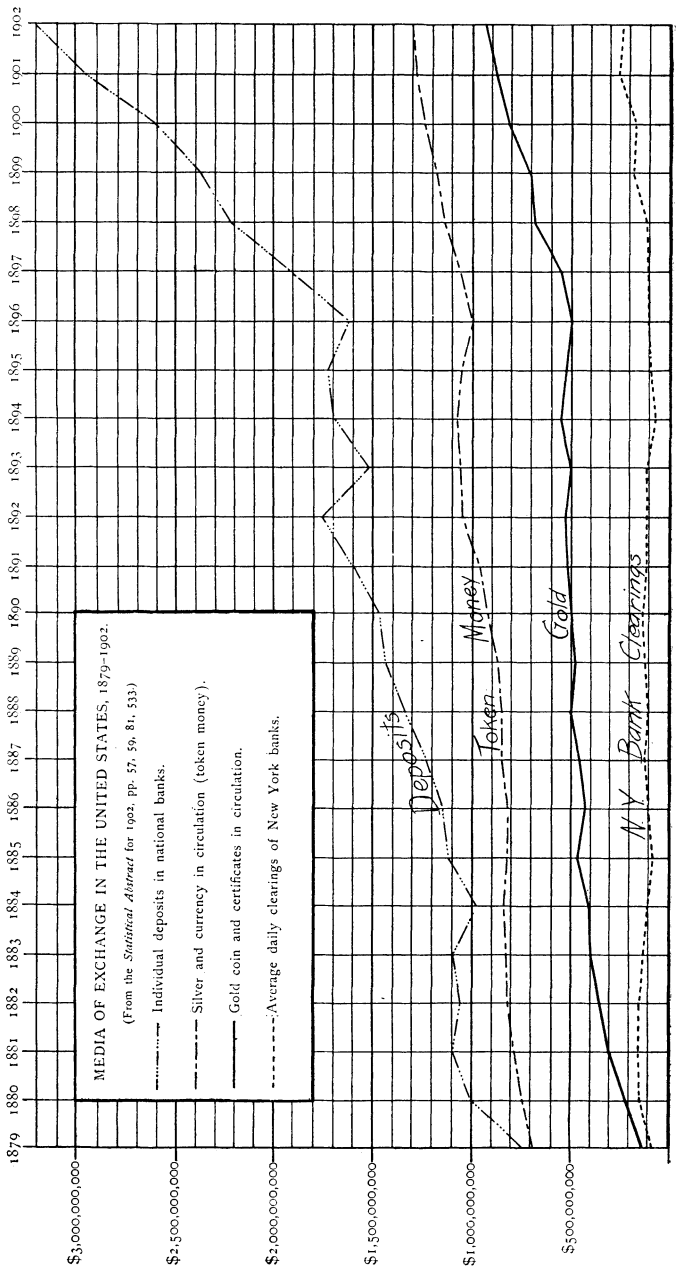
¹ The amount of the standard commodity required by a community as a medium of exchange varies with their habits of trade, their readiness to economize the use of

changed. Therefore, if a general increase in the quantity of goods takes place without a corresponding increase in the gold, it may first of all merely take up the slack in the monetary system; but if the increase keeps on, prices must lower so that the same gold may do more work, or else the habits of the community must be rearranged. On the other hand, if the amount of gold devoted to monetary uses increases, the opposite effects must follow. How little the habits of the people of the United States have changed during the past twenty-four years is shown by the adjoining chart. Bank clearings, bank deposits, token money, and gold are all media of exchange. The gold in the reserves of banks is included, because it serves as a medium indirectly; but the gold in the treasury is not included, because some of it has little connection with the business world, while another part of it is represented in the circulation by certificates, and these are included as gold. It may fairly be inferred that the payments made respectively by book credit, barter, securities, and bills of exchange, if the amounts could be ascertained, would exhibit equally constant ratios to the volume of gold in circulation.

Since the aggregate of all the media of exchange must equal the goods to be exchanged, the conclusion is that, as in any other case of demand and supply, the goods and the gold are offset against each other, so that the value of one in terms of the other depends on the quantity of each. The monetary demand for gold is not a full bucket,¹ but it has a margin which extends or contracts as the supply increases or diminishes.

This discussion of the "demand and supply" phase of the argument may be concluded with one inquiry: How extensive is the monetary demand for gold compared with the demand for the valuable standard, their banking development, their general commercial intelligence, their confidence in their fellows, the stability of the government, the prevalence of law and order, the conditions of business, and many such conditions.—LAUGHLIN, *op. cit.*, p. 325.

¹ If a stream of water from a hose be turned into a bucket when the bucket is full, the excess of water will overflow on the ground and spread everywhere; in like manner, the stream of new gold will first flow into the circulation and reserves, if needed there, and all additional supplies will pass into the arts for general use.—LAUGHLIN, *op. cit.*, pp. 338, 339.



it in the arts? Professor Laughlin gives the supply of gold as \$9,000,000,000 and the monetary demand in 1901 as \$4,906,700,000. He places consumption in the arts during the last fifty years at not "more than \$2,500,000,000 (or possibly \$3,000,000,000)." A remainder of about \$1,500,000,000, not otherwise accounted for, he suggests is held "in the reserves of great financial houses in Europe, and of other private bankers."¹ This remainder is then in a way used for monetary purposes. The monetary demand without the remainder is over one-half the supply; with the remainder it is nearly two-thirds. Certainly this is not a demand to be disregarded in taking account of the factors that determine the value of gold.²

The trouble is the new critics of the quantity theory think of the gold that passes from hand to hand in retail trade as the only part of the monetary supply which needs to be proportioned to the business done. The greater part of the gold devoted to monetary uses they think of as simply securing the standard, but as having no connection with the volume of business as the medium of exchange. The fallacy of this, however, I have shown in the preceding pages. To take the illustration of the boiler again, the indicator holds more water than the boiler itself.

The division of the total stock of gold between monetary uses and use in the arts is made, as Professor Carver says, "in such proportions that its marginal utility, or value, will be the

¹ *Ibid.*, p. 346.

² DR. WESLEY C. MITCHELL says: "To hold that the value of the article used as the denominator of value is determined solely by the supply and demand for the article in that particular form, is like holding that the water level in New York harbor is dependent only on the amount of water that is poured into it by the rivers, and that is evaporated from it by the sun, without considering that its level must always conform to the Atlantic Ocean."—JOURNAL OF POLITICAL ECONOMY, March, 1896, p. 149. The principle in the comparison is correct; but it is an exaggeration, and the exaggeration is on the wrong side. The quantity of gold in use as money is nearly twice as great as the quantity in use in the arts. LORD FARRER states this case fairly: "The value of gold, regarded only as a measure, depends on demand and supply. One, and probably the largest, item in the demand for gold is for use as a circulating medium."—*Op. cit.*, p. 102. However, the consumption of gold in the arts exceeds the wear and loss from the coinage.

same in each."¹ Some complications of this rule, however, need to be considered. In a time of expanding credit and rising prices, the purchasing power of money falls. But articles made of gold tend to rise in price like everything else; for making these a larger amount of gold is wanted. At the same time a larger amount of it is also wanted in the reserves of banks. The value of gold, therefore, tends to rise. Here it is better to distinguish the unit of value from the standard of value. The increase of credit lowers the value of the unit, while the increased demand for gold raises the value of the standard. What will happen then? Obviously the elasticity of the monetary system is first utilized. Gold is drawn from every use from which it can be spared. It will disappear from hand-to-hand circulation as far as people can be induced to take token money in its stead. The rise in the rate of interest draws it from foreign countries, if they do not happen to be in the same situation. The manufacturers who use gold in the arts get it from coin or assay bars; for when it is obtained in this way, the work of refining the metal and giving it a standard fineness is done gratuitously by the government, and there is no dealer's profit to pay; but they will be prompt to offer a premium, if that be necessary to keep up their supply of bullion. In the summer of 1893 there was for a short time a premium on gold in New York. Then is when a strain is put upon a monetary system. At last the money market gives way. The collapse of credit and the fall of prices bring the unit once more back to the standard.

Professor Nicholson sums up this relation between gold and prices in a single sentence that I cannot forbear to quote :

The general level of prices throughout the world will be so adjusted that the metals used as currency, or as the basis of substitutes for currency, will be just sufficient for the purpose.²

III

After having shown the quantity principle to be substantially intact at the point where the critics have made their most per-

¹ *Quarterly Journal of Economics*, July, 1897, p. 431. This is in a longer passage quoted by PROFESSOR LAUGHLIN, *op. cit.*, pp. 338, 339.

² *Money and Monetary Problems*, second edition, p. 88.

sistent attacks, this article might properly end. But there are additional reasons, some of them quite independent of the ones already presented, why the main principle of the quantity theory must be retained.

The new writers make much of the cost of production of goods as a factor in determining the general level of prices. The issue on this point has been stated with perfect clearness by Professor Laughlin :

In the case of improved processes of production, under the quantity theory, prices could fall only through the fact of a vastly greater number of goods waiting to be exchanged as compared with a quantity of money not increased in proportion to the increase of goods ; that is, improvements could eventually result in lowered prices only by increasing the total mass of goods to be exchanged or by diminishing the quantity of money in circulation. Carried to its logical consequences, on this interpretation, one is brought to the *reductio ad absurdum* that prices in general cannot fall because of cheaper methods of production.¹

There are two points of view from which relative values can be regarded, cost of production and marginal utility. With goods that are regularly produced and soon consumed, cost of production is the controlling factor ; marginal utility has little effect on price ; it merely determines the amount produced. But with goods that are either produced or consumed irregularly, or of which a large stock must be carried, the quantity that happens to be on hand at any given time, and the marginal utility of that quantity, become the controlling factors, while cost of production recedes into the background. Of goods of the latter class gold is the best example. Now, if we wish to discover the factors that influence the relative values of two articles, say gold and wheat, it is important that we be clear about our point of view. Between harvests the relative values of wheat and gold depend on the relative quantities and marginal utilities of each ; cost of production disappears as a factor for the time being. In the course of half a century, on the other hand, producers in seeking the greatest profit will so divide their labor between the two kinds of goods, thus regulating the stocks in the market, that the ratio of marginal values will correspond closely to the

¹ *Op. cit.*, p. 358.

ratio of costs of production. But how will it be during the intervening years? A change in the cost of production of wheat will in two or three years change the quantity on the market so that the change in price will be proportioned to the change in cost. Not so with gold. Can we therefore say that the cost of production controls one and quantity the other? No; if we wish to get a ratio between the two, we must compare like with like. During the interval required for gold to respond to its cost of production, we must compare the quantity of gold with the quantity of wheat. The cost of production of wheat and other goods may be halved, but if the other conditions remain unchanged—quantities of gold and goods, and the methods of exchange employed—the gold values of goods will remain unchanged. To balk at this conclusion and call it a *reductio ad absurdum* does not weaken the line of reasoning.

All of the credit school, as far as I have become acquainted with them, leave one serious gap in their work. The quantity principle has been the keystone of our theory of international values and trade. These new critics knock it out, but they put nothing in its place. How is the equilibrium of a country's foreign commerce maintained, if not by the flow of gold and consequent change of prices? Most of the importers never export anything, and most of the exporters do not import. The individuals in each group do their trading independently of one another and of the other group. How is it that the imports so nearly equal the exports? When we look at the co-ordinate chart representing the imports and exports of a country for a long series of years, we want to know what the forces are which hold those two lines so close together. If the huge balance of trade in favor of the United States for the last half-dozen years, and the increase in our stock of gold that it has caused, have not contributed to the rise of prices, why is it that our prices have risen? Why is it that exports are now decreasing and imports are increasing? Something has laid hold of these two lines on the chart of our country's foreign trade and is drawing them together again after their wide divergence.¹

¹ PROFESSOR LAUGHLIN has a chapter on "Prices and the International Movement of Specie," but he does not answer the question raised here. My question may

Professor Laughlin contends that, in any consideration of the value of gold, the world-demand and the world-supply are the only demand and supply of consequence, and therefore the general level of prices must be the same everywhere. But there is certainly room for local demand and supply that may play over the world-demand and supply; there may be local variations in the general level of prices. That there are such local variations should need no proof; it is a matter of common information that the general level of prices is lower in Europe than it is in America, and lower in Asia than it is in Europe. Professor Laughlin says that gold prices cannot "in general remain on a higher level in one country than another (the cost of carriage apart) even for a brief time."¹ But is not cost of carriage a large and important factor? There is not only the cost of carrying the gold, but there is also the cost of carrying back the goods bought with it; more important still, goods must be found in the country of low prices which the other country wants. Some things, as lands and houses, cannot be carried at all, and the same is practically true of personal services. Bulky commodities, like fuel, building materials, and furniture, because of the excessive cost of carriage, may be several times as dear in one place as in another. Articles that are perishable or that will not bear transportation, like fresh vegetables and milk, are scarcely subject to "the action of international markets." And all commodities, even those whose prices are most under the control of the world-market, have an appreciable cost of carriage. This cost of carriage, instead of being something to be set aside as only a slight disturbance, is the vital element in the case when relative prices in distant regions are under consideration. One commodity may have a price in one region that is always lower than the price in another region. If one price can be lower, the average of prices may be lower. Therefore local variations in

be plainer if applied to his diagram on p. 378 of his *Principles*. Suppose that the D exported by England is greater than the F exported by the United States. The United States must then export gold or securities to pay the balance. This cannot go on forever. In some way the D and the F are brought to approximate equality. How is it?

¹ *Op. cit.*, p. 369.

the world-level of prices are possible, and may be expected if any reason can be shown for their existence.

Commerce between distant regions takes place whenever the difference between the prices of any commodity in any two regions is sufficient to pay the cost of moving it. It therefore follows that a fall in the level of prices in one country would render possible the export of articles not previously exported.

I fail to see the necessity for a change in the relative costs of production within a country, as is asserted by Professor Laughlin. Lord Farrer grants the point in contention here in these words:

If gold were actually used in all purchases and sales in England and in America, it is easy to see why the transfer of gold from England to America should at once and directly lower prices in England, and raise all prices in America.¹

But even though most purchases and sales are made with other media, the same results must follow in so far as a given proportion of gold to other media must be maintained.

The statement occurs frequently that the international flow of money is a result, and not a cause, of a difference in prices. Is the flow of gold then, when once started, something that will go on forever? If not, what force comes into operation to check it? The answer, it seems to me, is found in the principle to be seen at work everywhere, namely, that results exhaust or counteract the cause that produces them. The introduction of a new and constant factor produces results; the results go on accumulating until they counteract the cause. Thus a species of animal increases in numbers. This exhausts its food supply, and affords sustenance to its enemies, and produces other results which must ultimately check its increase. So, too, we should expect that an international flow of gold, once started by a difference in prices, would set in operation forces tending to diminish this difference, and thus the flow would check itself by counteracting its cause.

Besides, if the gold and the prices vary together, this is in substantial accordance with the quantity theory, although the usual statement of it makes the change in prices follow the

¹ *Op. cit.*, p. 93.

change in gold. It is only necessary to show how there can be a change of prices when there has been no antecedent change of money to cause it. The explanation is found in an element which I have already mentioned as the cause of certain phenomena that would otherwise appear to be in conflict with the quantity theory, namely, speculation. The business men of a country get the impression—no matter how, and no matter whether the impression be well founded or not—that prices are going to rise. They increase their purchases of goods, getting the means therefor by increased borrowings. This enlarges the credit medium of exchange. Here we have the explanation of of higher prices: a disposition to buy more goods, with increased purchasing power to offer for them, and no equivalent increase in the quantity of goods. The deposits of banks increase, and to keep up the reserves in proper proportion more gold must be obtained; the rate of interest rises, securities are exported, and gold is imported. Then when investigators begin to suspect that the bull movement will go no farther, it stops forthwith, and changes in the opposite direction set in. The proportions between the amount of business and the amount of gold are preserved, in accordance with the quantity theory.

In this connection Professor Laughlin seems to me to have made one oversight. He makes a distinction between normal and abnormal credit. This is doubtless an important one in many ways, but the two kinds of credit are no different in their effect on prices. Increase of credit of any kind is an increase of demand for goods. The rise of prices may be expected to be in the same ratio that the increase of credit bears to the total medium of exchange, goods remaining the same. Professor Laughlin, however, assumes that normal credit increases only in proportion as goods increase; the limit to normal credit, as he defines it, is set by the selling value of the goods. But ordinarily the credit used is far within this limit. A banker here thinks that the loans of his patrons may not in the aggregate exceed one-half of their aggregate borrowing capacity. How far the borrowing capacity is utilized at any one time depends on how much profit business men think they can make by extend-

ing their operations. It is possible, therefore, to have an increase of normal credit far greater than the increase of goods. This will be an increase of purchasing power and will raise general prices. General production can increase only slowly, with the increase of labor and capital, or with improvements in modes of production, and cannot therefore keep pace with this increased demand. We must conclude, then, that normal credit may affect a rise of prices.

Then there are the historical facts of which the new critics have made much. Professor Laughlin says¹ he was led to question the truth of the quantity theory "because it gave no solution of practical problems of price." Professor Scott makes "weakness of the quantity theory as an explanation of certain phenomena of price" one of the three counts in his argument.

First let this view of the question be put into its proper place. Professor Laughlin and Professor Scott both begin with the deductive side, and devote to it the greater part of their space, thereby recognizing that the inductive, historical, statistical method must hold a subordinate place. Lord Farrer either holds strictly to the deductive line, using concrete facts only to verify or illustrate, or else he interprets some episode of history in the light of monetary principles as he understands them. Others, notably Mr. J. Shoenhof, ignore the deductive side. Their efforts to overthrow the quantity theory reminds the writer of a puzzle encountered in his boyhood, in which a piece of paper is cut in such a way that the sum of the squares of the two sides of a right-angled triangle appears to be different from the square of the hypotenuse. As long as the deductive argument in support of the quantity theory stands, "the facts" can at the most only show that there is some disturbing factor which is not taken into account.

If some of these historical investigations be shorn of the unwarranted inferences that accompany them, they cease to be puzzles and become fruitful criticisms. The moment we think of them, not as contradicting the old principle, but as correcting the statement of it and adding to our knowledge of the factors

¹ *Op. cit.*, p. 326.

which modify its working, they become steps in the discovery of new truth.

Perhaps the most notable of these historical studies has been one on prices in the United States during and after the Civil War. The monetary side of it was worked out by Miss S. McLean Hardy;¹ the commodity side and the effect of credit on the monetary side were worked out by Dr. Wesley C. Mitchell.² The results are given by Dr. Mitchell in these words:

If there were 100 units of money work to be performed in 1860, there were 500 units in 1891. At the former date the money circulation of the country formed 63 per cent. of the total media of exchange; that is of the bank deposit currency plus the money. At the latter date it formed 33 per cent. Then in 1860 the work performed by money was 63 per cent. of 100 units, or 63 units. In 1891 it was 33 per cent. of 500 units, or 165 units. This is an increase of not quite two and two-thirds times in the work done by money. But meanwhile the amount of the circulating medium had increased nearly three and one-half times.

In view of the number of data that entered into this result and of the extent to which mere estimates had to be used, the discrepancy is surprisingly small. The proper conclusion would be, not that the quantity principle as applied to the case is a "mistaken generalization," but there is some error in the data or that some disturbing factors have been overlooked. I will not attempt to find the former, but I will mention one of the latter. During the past forty years there has been a great increase in division of occupations. This means that a smaller proportion of the goods produced are consumed by their producers, and that a larger proportion have to be exchanged. In 1860 only 16.1 per cent. of the population of the United States lived in cities of 8,000 inhabitants or over; in 1890 this per cent. had risen to 29.2. People who live in cities are dependent upon exchange for practically everything they use; dwellers in the rural regions, on the other hand, consume not a little of their own product, and formerly more than now. In this way, not-

¹ JOURNAL OF POLITICAL ECONOMY, Vol. III, pp. 145-68 (March, 1895).

² *Ibid.*, Vol. IV, pp. 139-65 (March, 1896).

withstanding the elimination of some small merchants,¹ the amount of exchanging to be done has certainly increased much more than in proportion to the increase in products.

Dr. Mitchell finds other discrepancies in the depreciation of greenbacks. Here is one of them :

Why was it that the premium on gold which stood at 145 on the first of July, 1863, fell to 138 on the sixth, to 133¾ on the eighth and to 123¼ on the twentieth of the month? The battle of Gettysburg was raging July 1, 2, and 3. Vicksburg surrendered July 4. July 5 was Sunday. When the market opened on Monday, gold had fallen to 138. As Lee retreated with his defeated army across Pennsylvania and Maryland, back into Virginia, the premium fell rapidly, and by the twentieth of the month was down to 123¼.

These experiences of the United States seem to demonstrate quite clearly that the value of inconvertible paper may rise or fall for reasons that affect neither the supply of it in circulation nor the amount of work it has to perform. This new factor is the confidence that people feel that the paper will one day be redeemed.²

While the price of gold cannot be taken as an index of the general level of prices, and therefore of the depreciation of paper, yet it certainly indicates the trend of prices. In my opinion Dr. Mitchell's point is well taken. I would, however, state it differently; or rather I would include it under the general subject of speculation which has already been mentioned as a disturbing factor. If speculation in money could be separated from speculation in goods—the one is simply the reverse side of the other—this would be speculation in money. The prospect of early resumption of specie payments must have led everyone with any tendency toward speculation to hold on to his money and wait for lower prices before purchasing; such action, of course, tended to lower prices; from the point of view of the quantity theory, we may say that it raised the value of money by lessening its rapidity of circulation or by removing some of it from circulation. "This new factor," then, when analyzed, is merely a further elaboration of the old quantity theory.

¹ "There has taken place an alteration in the mechanism of distribution, by which the number of times that goods exchange in passing from producer to consumer has been lessened."—MITCHELL, *op. cit.*, p. 161.

² *Op. cit.*, p. 152.

In like manner the other failures of the quantity theory to fit the facts may in time be explained.

IV.

What, then, remains, of the quantity theory? Starting from the postulate, granted by everyone, that the medium of exchange (using this term in its broadest sense so as to include even barter) at any given time equals the goods exchanged, and observing that the habits of each business community permit only limited changes in the proportions of gold and the other elements that compose this medium, we conclude that changes in the ratio of gold to goods may be expected to produce like changes in prices. Some gold may be shifted to or from use in the arts; but only about one-third of the total stock of gold is in that use, and little change in this proportion is possible. Therefore the central principle of the quantity theory remains.

Notwithstanding the ambiguity of the term "money," we may still take it to mean any one of several things—gold coin, gold and token money, or the entire medium, because these things change their proportions *pari passu*, except as the habits of the community change.

It is admitted that a change in prices may precede the corresponding change in money. A speculative movement in one country may raise prices by a fuller use of borrowing power and of credit media of exchange; to restore the customary proportions, the amounts of gold and token money will then increase. Speculation is also the disturbing factor which explains other seeming failures of the quantity theory to accord with the facts.

Professor Laughlin says that "to admit that other things than the quantity of money in circulation affect price is a tacit surrender of the quantity theory".¹ Of course, this is only a matter of names; but if it be shown that the other things affect value only by affecting the ratio between goods and the medium of exchange, it would seem that the old name might fairly be retained.

The critics of the quantity theory seem to me to approach

¹ *Op. cit.*, p. 321.

the question in the wrong direction. They keep trying to give a "final *coup de grace* to the old theory." If they would keep the postulate mentioned above constantly before their eyes, and then investigate the adjustability of the various media in their proportions to one another, and seek for the disturbing factors when prices do not respond to changes in the ratio of goods to money, we should sooner know how far the quantity principle may be relied on. Before the old theory can be finally abandoned as useless, the critics must show (1) that habits as to the kinds of media used are adjustable immediately and to any degree; (2) that the law of marginal utility does not apply to the five or six billions of dollars' worth of gold devoted to monetary uses; and (3) how the equilibrium of buying and selling is maintained between localities.

FREDERICK R. CLOW.

OSHKOSH, WIS.